



# 1214-300V

300 Watts - 50 Volts, 330 $\mu$ s, 10%  
Radar 1200 - 1400 MHz

## GENERAL DESCRIPTION

The 1214-300V is an internally matched, COMMON BASE transistor capable of providing 300 Watts of pulsed RF output power at three hundred thirty microseconds pulse width, ten percent duty factor across the band 1200 to 1400 MHz. This hermetically solder-sealed transistor is specifically designed for L-Band radar applications. It utilizes gold metallization and diffused emitter ballasting to provide high reliability and supreme ruggedness.

## ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation @ 25°C

420 Watts

### Maximum Voltage and Current

BVces Collector to Emitter Voltage

75 Volts

BVebo Emitter to Base Voltage

3.0 Volts

Ic Collector Current

20 Amps

### Maximum Temperatures

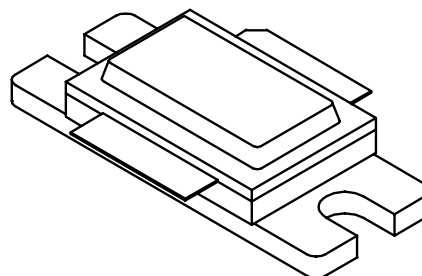
Storage Temperature

- 65 to + 200°C

Operating Junction Temperature

+ 200°C

## CASE OUTLINE 55ST, STYLE 1



## RF ELECTRICAL CHARACTERISTICS @ 25 °C

| SYMBOL   | CHARACTERISTICS         | TEST CONDITIONS           | MIN  | TYP | MAX   | UNITS |
|----------|-------------------------|---------------------------|------|-----|-------|-------|
| Pout     | Power Out               | Freq = 1200 – 1400 MHz    | 300  |     | 410   | Watts |
| Pg       | Power Gain              | Vcc = 50 Volts            | 8.75 |     |       | dB    |
| $\eta_c$ | Collector Efficiency    | Pin = 40 Watts            | 50   | 55  |       | %     |
| RI       | Input Return loss       | Pulse Width = 330 $\mu$ S | 10   |     |       | dB    |
| Droop    | Droop                   | Duty Factor = 10%         |      |     | 0.5   | dB    |
| Flatness | Flatness                |                           |      |     | 1.0   | dB    |
| VSWR-S   | Load Mismatch Stability |                           |      |     | 1.5:1 |       |
| VSWR-T   | Load Mismatch Tolerance |                           |      |     | 2.5:1 |       |

Note: test @ 1.2, 1.3, and 1.4 GHz.

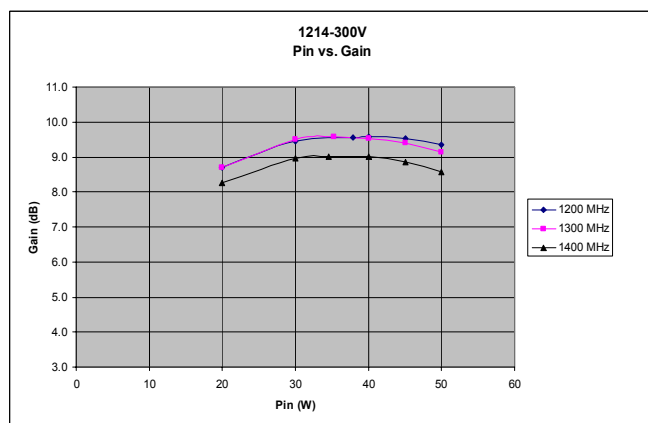
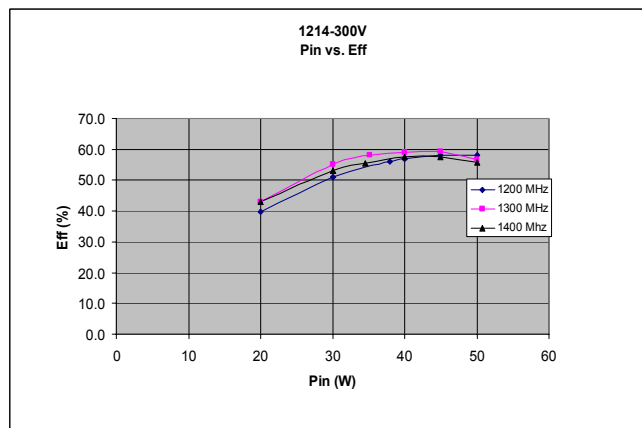
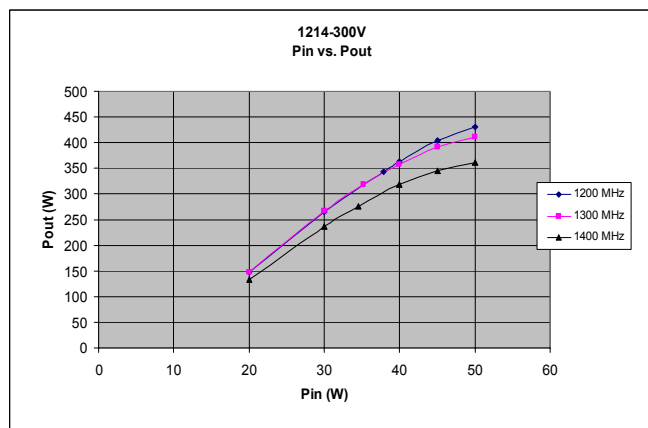
## FUNCTIONAL CHARACTERISTICS @ 25°C

|                 |                                |                       |    |  |      |       |
|-----------------|--------------------------------|-----------------------|----|--|------|-------|
| Bvces           | Collector to Emitter Breakdown | Ic = 100 mA           | 75 |  |      | Volts |
| Ices            | Collector to Emitter Leakage   | Vce = 50 Volts        |    |  | 10   | mA    |
| $\theta_{jc}^1$ | Thermal Resistance             | Rated Pulse Condition |    |  | 0.29 | °C/W  |



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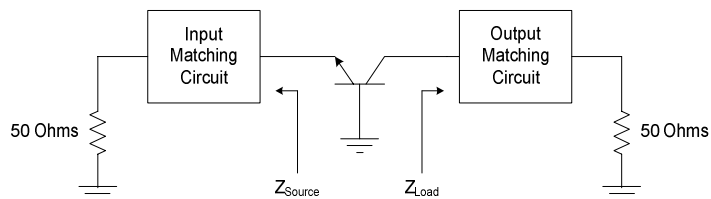
## Typical Performance Curves:



## Impedance Information

| Impedance |            |            |
|-----------|------------|------------|
| Freq      | Zs         | Zl         |
| 1200      | 1.28-j2    | 4.24-j9.03 |
| 1300      | 1.27-j1.41 | 2.1-j3.4   |
| 1400      | 1.29-j0.87 | 1.86-j2.56 |

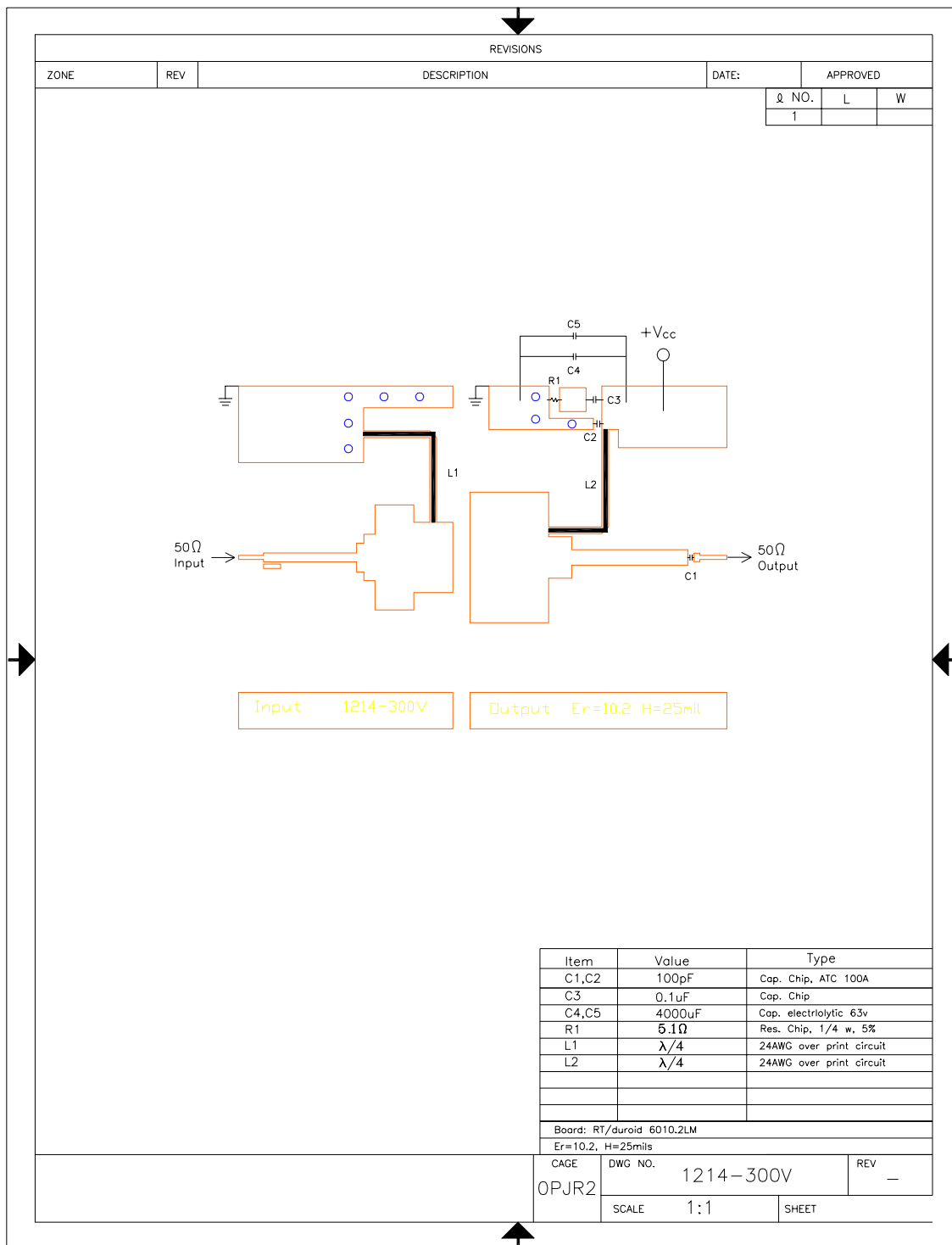
Board Material RT 6010.2 LM 25 Mil

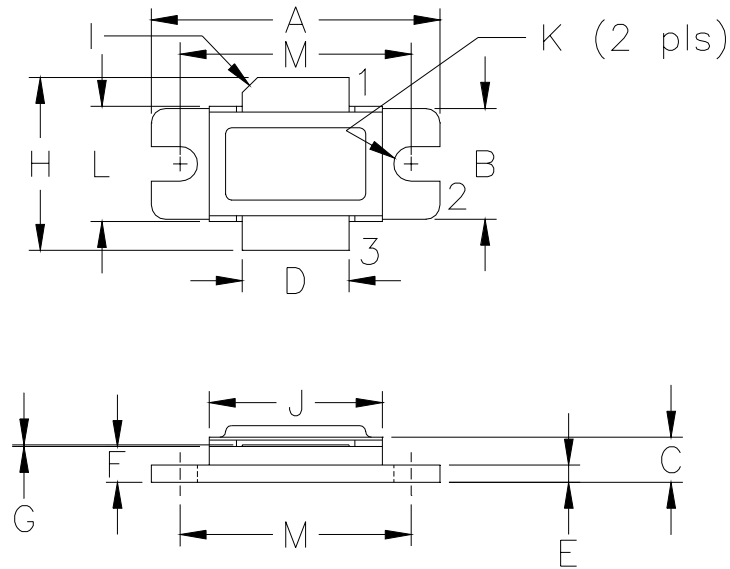




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## BROADBAND TEST CIRCUIT

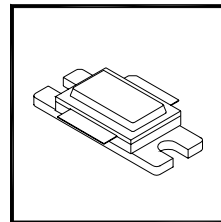




| DIM | MILLIMETER | ±TOL       | INCHES   | ±TOL         |
|-----|------------|------------|----------|--------------|
| A   | 25.40      | .25        | 1.000    | .010         |
| B   | 9.78       | .25        | .385     | .010         |
| C   | 4.00       | .19        | .142     | .007         |
| D   | 9.40       | .13        | .370     | .005         |
| E   | 1.53       | .13        | .060     | .005         |
| F   | 3.18       | .13        | .125     | .005         |
| G   | 0.08       | +.05/-0.00 | .003     | +.002/-0.000 |
| H   | 19.05      | 0.51       | .750     | .020         |
| I   | 45°        | 5°         | 45°      | 5°           |
| J   | 15.24      | .25        | .600     | .010         |
| K   | 3.05 DIA   | .13        | .120 DIA | .005         |
| L   | 10.15      | .13        | .400     | .005         |
| M   | 20.32      | .25        | .800     | .010         |

STYLE 1:  
PIN 1 = COLLECTOR  
2 = BASE  
3 = EMITTER

STYLE 2:  
PIN 1 = COLLECTOR  
2 = EMITTER  
3 = BASE



**GHz TECHNOLOGY**  
RF — MICROWAVE SILICON POWER TRANSISTORS

DWG NO.

55ST